

COULD AUSTRALIA HAVE SUSTAINABLE AND CONVENIENT URBAN TRANSPORT WITH FEWER CARS? [1]

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Many advocates for sustainable transport [3] argue that our cities and suburbs “need fewer cars, smaller cars and less driving”. They envisage the transformation of our urban areas into compact communities where most journeys are made by active travel (walking, cycling, e-scooters) or by public transport.

Our car dependence makes an impact on land use. Dual carriageways and freeways are being constructed in our cities to cope with growing peak hour congestion due to a high level of car use for commuting. If privately owned cars commuting to and from work carried an average of (say) 2.2 people, instead of 1.1 people, the number of cars on our roads during peak hours would be halved.

Car ownership is highly convenient for many journey types, but it is also expensive. Many young city dwellers rely on Ubers or car-sharing services to get around. So could car sharing and car-pooling assist in reducing peak-hour congestion?

Voluntary car-pooling for commuters is impeded by the fact that employees currently work with highly varying schedules, but there may be promise in dynamic carpooling, where commuters find travel partners spontaneously, often at the last minute, using mobile applications or online platforms. And there is a potential connection between dynamic carpooling and robotaxis, which could provide a pathway to reduce private car ownership.

Kent Fitch, a Canberra-based IT professional, developed a simulation [4] to model the use of robotaxi fleets to meet the transport needs of Canberrans. His model made detailed, documented assumptions about costs, travel patterns, and electricity consumption. Some of his findings were:

- apart from exceptions for tradies and specialist vehicles, 34,000 robotaxis would be sufficient to provide the 1.1 million journeys required on a week day in Canberra
- using an unsubsidised fare of \$4.84 for a 10km peak-hour trip (and \$3.08 off-peak) the fleet business would make a surplus of \$125M per year
- costs would be lower than that of privately owned cars and lower than the real costs of fixed-route public transport
- with this size fleet, 95% of journeys can begin within 1 minute of being requested.

However, here is the difficulty. The model uses an average occupancy of 2.4 passengers for fleet cars arriving at key commute destinations at peak times. Even with a significant price differential to encourage peak hour car sharing, will commuter behaviour embrace “dynamic car-pooling” for these journeys to the extent necessary to achieve these average occupancies?

If 25% of Canberrans felt sufficiently confident to relinquish their owned cars, the total number of cars in Canberra would fall from the current level of 340,000 to around 265,000 (including the robotaxi fleet).

There are many obstacles to this scenario involving autonomous cars and dynamic car-pooling: the barriers are technical, legal and psychological.

Technical: despite the many examples of successful robotaxi journeys, safety and reliability errors do still occur. Then there is the risk posed by hacking and unauthorized access to robotaxi

fleets. If autonomous vehicles were to populate our roads at scale in the future, any malicious hacking could have catastrophic consequences.

Legal: the National Transport Commission [5] noted that, if a vehicle is controlled by an automated driving system, a human user will not be able to ensure that the vehicle is driven safely. Who will be blamed for an accident?

Psychological:

- people feel less safe in an autonomous car, regardless of whether published safety data shows that travel with human drivers can, in aggregate, be less safe
- media reaction to an autonomous car accident will be of a different scale to a similar accident where a human driver is involved.
- many people are likely to be averse to sharing a car with strangers, especially at night or in less populated places
- many Australians love their cars, want to own them, and store some of their possessions in them.

There are many steps that governments could take to move Australia in the direction of “fewer cars, more active travel and greater use of public transport” in our cities and suburbs. For example, they could:

- build and maintain cycling and pedestrian path networks, which would also cater for electric bicycles and e-scooters
- electrify fixed-route public transport services and build more park-and-rides (which would include slow speed EV chargers)
- introduce more “on demand” public transport services (without fixed routes) for off-peak travel in the suburbs
- stop duplicating urban roads, except where essential for safety reasons
- conduct trials of autonomous vehicles on urban roads, including initial pilots of robotaxi services, to gauge public acceptance
- publish data on accident rates for autonomous vehicles and encourage public discussion about autonomous vehicle safety.

Footnotes

[1] A longer version of this paper can be found at <https://www.aeva.asn.au/articles/we-need-fewer-cars-but-how-could-we-achieve-that/>

[2] Warwick Cathro is National Secretary of the Australian Electric Vehicle Association (AEVA) which represents the consumers, such as the owners and drivers of EVs. He formerly worked at the National Library of Australia, where he was the project director for the service known as Trove. This submission reflects his personal views, and do not necessarily reflect the views of AEVA.

[3] For example, see: Brent Toderian. Better transportation in a 5 crisis world. <https://www.youtube.com/watch?v=DtZYknxAp4Q>

[4] Kent Fitch. Canberra autonomous car simulation.
<https://canberraautonomouscars.info/>

[5] National Transport Commission, 23 April 2024.
<https://www.infrastructure.gov.au/have-your-say/automated-vehicle-safety-reforms>